

PATENT COOPERATION TREATY

PCT

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY PCT

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P212347PCT	FOR FURTHER ACTION	
	See Form PCT/IPEA/416	
International application No. PCT/NL2005/000160	International filing date (day/month/year) 04.03.2005	Priority date (day/month/year) 04.03.2004
International Patent Classification (IPC) or national classification and IPC INV. A23L1/22 A23L1/00 A61K7/16		
Applicant QUEST INTERNATIONAL B.V. et al		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of 3 sheets, as follows:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand 23.12.2005	Date of completion of this report 31.05.2006
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized officer Neys, P Telephone No. +31 70 340-4183



INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/NL2005/000160

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - international search (under Rules 12.3 and 23.1(b))
 - publication of the international application (under Rule 12.4)
 - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-19 as originally filed

Claims, Numbers

1-17 received on 23.12.2005 with letter of 23.12.2005

Drawings, Sheets

1, 2 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. The amendments have resulted in the cancellation of:
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):
4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - the description, pages
 - the claims, Nos.
 - the drawings, sheets/figs
 - the sequence listing (*specify*):
 - any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/NL2005/000160

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-17
	No: Claims	
Inventive step (IS)	Yes: Claims	1-17
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: WO 91/17821 A

D2: US 2003/082272 A1

1. D1 is regarded as being the closest state of the art to the subject-matter of claim 1. D1 discloses micro-capsules comprising gelatine, wax and a flavouring agent. The microcapsules have a diameter of 125-450 μm and are suitable for use in chewing gum. Next to the gelatine, the colloid matrix could comprise amongst others gum arabic and starch. Further, the matrix may include saccharides like saccharose.

The subject-matter of claim 1 differs from D1 in that a fat having a melting point of at least 35 °C, selected from triglycerides, sucrose polyesters of fatty acids and mixtures thereof should be present. Further obligatory compounds are a film forming carbohydrate selected from gums, modified starches and cellulose derivatives, and a carbohydrate plugging material selected from mono-, di- and trisaccharides.

The subject-matter of claim 1 is therefore considered to be new (Article 33(2) PCT).

Both D1 and claim 1 relate to the field of encapsulated flavourants and address the problem of providing controlled release encapsulates and encapsulates having a sufficiently high resistance against oxidation of the flavourant with oxygen.

The problem to be solved by the present invention may be regarded as providing an alternative encapsulated flavourant.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

Starting from D1 one has to replace the wax with a fat and has to include both a film

forming carbohydrate and a carbohydrate plugging material in the amounts as indicated in claim 1.

D2 discloses beads comprising a gelatine/alginate matrix and a flavouring agent which can be dissolved in a liquid oil, e.g. miglyol, or a solid oil, e.g. hydrogenated palm kernel oil. The beads have a diameter in the range of 10-5000 μm and can be used for flavouring chewing gum.

The amount of gelatine in the beads of D2 is less than 10 wt%. Further, the beads of D2 do also not comprise a film forming carbohydrate and a carbohydrate plugging material.

By combining D1 and D2 the skilled person would therefore not arrive at the subject-matter of claim 1.

2. Claims 2-13 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

3. The flavour delivery systems of claims 14 and 15, and the chewing gum or toothpaste of claim 17, comprising the particulate flavour composition or flavour delivery system are also considered novel and inventive. As is the use of the particulate composition or of the flavour delivering systems for imparting controlled flavour release to chewing gum or toothpaste (claim 16).

CLAIMS

1. A particulate composition comprising controlled release particles wherein discrete elements of flavouring-containing fat are dispersed in a gelatine matrix, said particles containing:
~~0.1-40 wt%, preferably 5-30 wt% of flavouring;~~
~~10-70 wt%, preferably 20-50 wt% of gelatine; and~~
~~0.1-75 wt%, preferably 5-50 wt% of fat selected from triglycerides, sucrose polyesters of fatty acids and combinations thereof, the fat having a melting point of at least 35, preferably 38 °C;~~
~~0.1-10 wt% of film forming carbohydrate selected from the group of gums, modified starches, cellulose derivatives and mixtures thereof; and~~
~~1-30 wt% of carbohydrate plugging material selected from the group of mono-, di- and trisaccharides and mixtures thereof;~~
and said particles having a volume weighted average diameter of 50 – 1500 μm .
2. Composition according to claim 1, wherein at least 90 % of the flavouring is dissolved or dispersed homogeneously in the discrete fat elements.
3. Composition according to claim 1 or 2, wherein the controlled release particles further comprise a film forming carbohydrate in an amount of 0.1-10 wt%, which film forming carbohydrate is selected from the group of gums, modified starches, cellulose derivatives and mixtures thereof.
4. Composition according to any one of the preceding claims, wherein the controlled release particles further comprise a Composition according to claim 1 or 2, wherein the carbohydrate plugging material in an amount of 1-30 wt%, which plucker is selected from the group of glucose, fructose, maltose, sucrose, raffinose, xylitol, sorbitol and mono-, di- and tri-saccharides and mixtures thereof.
- 5-4. Composition according to any one of the preceding claims, wherein the gelatine has a bloom value of 10-300.

5. Composition according to any one of the preceding claims, wherein the gelatine is derived from bones, especially bones originating from pigs.

7.5. Composition according to any one of the preceding claims, wherein the hardened fat has a melting point of at least 4538 °C.

7. Composition according to any of the preceding claims comprising 0-6 wt% of water.

9.6. Composition according to any of the preceding claims, wherein the flavouring is selected from the group of menthol flavouring, mint flavouring, eucalyptus flavouring and mixtures thereof.

10.7. Composition according to any one of the preceding claims, wherein the composition comprises at least 50 wt% of the controlled release particles.

11.8. Composition according to any one of the preceding claims, wherein the flavouring and fat contained within the controlled release particles are present as discrete elements that are entrapped within a matrix containing the gelatine.

12.9. Composition according to any one of the preceding claims, wherein the combination of flavouring, gelatine and fat, film forming carbohydrate and plugging material constitutes 50-100 at least 70 wt%, preferably at least 80 wt% of the controlled release particulates composition.

13.10. Composition according to any one of the preceding claims, wherein the controlled release particles are obtainable by extrusion or spray drying of a solution or dispersion comprising flavouring, gelatine, fat, film forming carbohydrate, plugging material and a solvent or by fluidized bed coating of core particles with said solution or dispersion.

14.11. Composition according to any one of the preceding claims wherein the controlled release particles comprise an outer coating layer containing at least 50

wt% of a hydrocolloid selected from the group of polysaccharides, zein, shellac, cellulose derivatives and combinations thereof.

15.12. Composition according to any one of the preceding claims, wherein:

$$((\text{Bloom number}/150) + (\text{wt\% gelatine}/30)) * (\text{wt\% fat}/10) \geq 1$$

16.13. Composition according to any one of the preceding claims, wherein:

$$((\text{Bloom number}/150) + (\text{wt\% gelatine}/30)) * (\text{wt\% fat}/10) \leq 1$$

17.14. Flavour delivery system, comprising 5-70 wt% of a composition according to claim 152 and 5-70 wt% of a composition according claim 163.

18.15. Flavour delivery system, comprising 5-70 wt% of a composition according to claim 152 and 5-70 wt% of liquid flavour.

19.16. Use of a particulate composition according to any one of claims 1-163 or of a flavour delivery system according to claim 174 or 185 for imparting controlled flavour release characteristics to chewing gum or toothpaste.

20.17. Chewing gum or toothpaste comprising 0.01-6 wt% of a particulate composition according to any one of claims 1-163 or of a flavour delivery system according to claim 174 or 185.